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EXAMINER

CHANG, EDITH M

ART UNIT	PAPER NUMBER
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2637

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Please find below and/or attached an Office communication concerning this application or proceeding.

22

Office Action Summary	Application No. 09/772,176	Applicant(s) PROCTOR, JAMES A.	
	Examiner Edith M. Chang	Art Unit 2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments/Remarks

1. Applicant's arguments with respect to claims 3-4 and 23-24 have been considered but are moot in view of the new ground(s) of rejection for the limitation "motion" in the "motion of at least one of the stations" of claims 3-4 and 23-24. The rejections of claims 1-2, 5-22, 25-42 are upheld.

Argument: Applicant argues that Moriyama does not disclose the claimed invention of "calculating a metric indicative of a changing environment between the first and second stations as a function of an underlying change in at least one modulation attribute of a signal transmitted across the wireless link".

Response: In light of the specification, the metric indicative of changing environment between the first and second stations may be

the metric computed from a signal in an automatic gain control loop (AGC) (page 4, lines 14-15 of the current specification) in a receiver unit and disclosed in FIG.6A and FIG.6B;

the metric computed from a phase error signal produced by a delay lock loop, matched filter, or correlator (page 4, lines 16-17 of the current specification) and disclosed in FIG.8; or

the metric computed from a frequency error signal in a frequency control loop (page 4, lines 18-19 of the current specification) and disclosed in FIG.7; and

the modulation attributes include amplitude, frequency, phase, or combination thereof (page 5, lines 1-2 of the current specification).

Moriyama discloses a radio receiver unit in FIG.12 with an AGC (25) and a frequency control loop (AFC 20) to calculate the metric as a function of the amplitude (FIG.13A, column 16, lines 13-14), or the phase (column 16, lines 15-16). Thus, Moriyama discloses the claimed invention of "calculating a metric indicative of a changing environment between the first and second stations as a function of an underlying change in at least one modulation attribute of a signal transmitted across the wireless link".

Argument: Applicant argues that Moriyama does not disclose the claimed invention of "adjusting at least one parameter of the wireless link to compensate for rapid changes affecting the signaling path".

Response: In FIG.12, Moriyama discloses the DSP 47 (& CPU 41) setting the tap coefficients of FIRs 22 & 23 (the FIRs 52 & 53 in the transmission as well) in the AGC and AFC to compensate/adjust the eye distortion (column 15, lines 60-66) wherein the distortion including the parameters: amplitude and phase, and it is well known in the art the AGC and AFC are automatic adjusting/controlling the amplitude and frequency of the received signal over the wireless link via the antenna 1. Therefore, Moriyama disclose the claimed invention of "adjusting at least one parameter of the wireless link to compensate for rapid changes affecting the signaling path" as recited in the claims.

Argument: Applicant argues that Moriyama only processing a demodulated received signal and the demodulated signal might still have phase and amplitude information, but this is not the same thing as determining a modulation attribute.

Response: In FIG.12, Moriyama discloses the reception 5 processing a received RF signal (analog received wave) from antenna 1 and the signal RD is the received data (digitized received signal) inherently with amplitude, phase and frequency, the DSP 47 with the CPU 41 controls (sets the tap coefficients) the FIRs (column 15, lines 51-55) and implements the operations of the FIRs that setting the optimal tap coefficients of FIRs is adjusting/compensating the distortion. The only processing a demodulated received signal is not a limitation recited in the claims, and a modulation attribute including amplitude, frequency, phase, or combination thereof is defined in page 5, lines 1-2 of the current specification. Hence, Moriyama discloses the limitations recited in the claims.

Argument: Applicant argues that Moriyama does not adjust a parameter of the wireless link itself, merely detects eye distortion, changing parameters of the receiver itself, but this is not the same thing as changing parameters of the link.

Response: In FIG.12, Moriyama discloses adjusting a parameter of the wireless link that is the modulation attribute: amplitude or the frequency in light of the current specification page 8, lines 8-12. The parameters of the wireless link are the characteristics of the environment of the wireless link and received in the received RF signal from the antenna, and are calculated/extracted in the receiver wherein then the

parameters of the wireless link can be modified/changed. Hence, Moriyama's receiver changing parameters of the link as recited in the claim.

Argument: regarding claims 5-7, Applicant argues that the metric is computed from a signal within an AGC loop.

Response: in FIG. 12, Moriyama discloses the eye distortion (the metric) being computed from a signal in the AGC 25 as recited in the claims and the metric is a function of statistic, the variance (column 16 lines 55-57, lines 65-67 '879) as disclosed in the FIG.6A of the current application wherein the metric is computed based on the signal from the AGC 610.

Argument: Regarding claim 8, applicant argues that Moriyama's does not mention the change in the modulation attribute is calculated from a delay lock loop, matched filter or correlator.

Response: Since Mariyama's circuitry can be applied to CDMA system as well as TDMA system; it is well known in the art that the receiver of the CDMA system comprising matched filter or correlator.

Argument: Regarding claim 18, applicant argues that Moriyama's adjusting frequency or amplitude does not teach adjust the modulation attribute.

Response: In light of the current specification the modulation attributes include amplitude, frequency, phase, or combination thereof (page 5, lines 1-2 of the current specification).

In FIG.12, Moriyama discloses the DSP 47 (& CPU 41) setting the tape coefficients of FIRs 22 & 23 (the FIRs 52 & 53 in the transmission as well) in the AGC

and AFC to compensate/adjust the eye distortion (column 15, lines 60-66) wherein the distortion including the parameters: amplitude and phase, and it is well known in the art the AGC and AFC are automatic adjusting/controlling the amplitude and frequency of the received signal over the wireless link via the antenna 1. Therefore, Moriyama disclose the claimed invention of adjusting the modulation attribute as recited in the claim.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 5-14, 18-21, and 25-42 are rejected under 35 U.S.C. 102(e) as being anticipated by Moriyama (US 6,307,879 B1).

Regarding **claims 1, 21 & 41**, in FIG.12, Moriyama teaches digital radio communication apparatus (column 1 lines 6-11) provided with filters to adapt for variations of the transmission path (column 4, lines 40-42). In FIG.12, the station communicates with other stations via antenna 1, the station comprises program means CPU 41 and DSP 47 (column 15 lines 40-44 & lines 49-60). The CPU 41 (as the processing unit) determines the bit error rate ER based on the received data RD

(column 15 lines 52-55) and detects the eye distortion based on the provided received data RD from the outputs of FIRs 22 & 23 (column 15, lines 62-66, the eye distortion based on the outputs of FIRs 22, 23). In FIG.13A & 13B, the eye distortion (column 16 lines 1-4) results from a variation of amplitude as well as a variation of phase (column 16 lines 13-16), hence the CPU 41 calculates the eye distortion (as the metric) which is a standard of measurement and a mathematic function of a changing wireless channel (column 16, lines 44-54, wherein the eye distortion indicates the variations of the received signal); and

the facilities (DSP 47 with FIRS 22 & 23, as the compensator) adjust the eye distortion (as the parameter, column 15 lines 64-66).

Regarding **claims 5-7 & 25-27**, in FIG. 12, Moriyama teaches the eye distortion (the metric) being computed from a signal received from the AGC 25 and the metric is a function of statistic, the variance (column 16 lines 55-57, lines 65-67).

Regarding **claims 8-10 & 28-30**, in FIG.12 & FIG.13 A&B, Moriyama teaches the eye distortion being generated from a phase error signal (column 16 lines 13-16, wherein the variation of phase is the phase error) produced by the matched filter and correlator used in the CDMA (column 18 lines 55-60).

Regarding **claims 11-13 & 31-33**, in FIG.12, Moriyama teaches the eye distortion computed from the outputs of FIRs 22 & 23, which receive a frequency error signal from the AFC 20.

Regarding **claims 14 & 34**, in FIG.13A & B, Moriyama teaches the eye distortion (the metric) being compared to a threshold 3 (column 14 lines 49-57).

Regarding **claims 18-20 & 38-40**, in FIG.12, Moriyama teaches reception 5 with AGC 25 and AFC 20, receiving a modulated signal received from the antenna 1 via the wireless channel, hence Moriyama teaches minimizing the frequency, phase or the amplitude offset of the received modulated signal.

Regarding **claim 42**, Moriyama teaches the station with transmission 3 and reception 5 with processors (47 & 41) and storages (28 & 42) to calculating the eye distortion (metric) and adjusting one parameter (refer to the rationale of the rejection of the claim 1), and it is well-known in the art that the hardware (DSP etc.) and software (instructions stored in the computer-readable medium) of the wireless terminals to perform the wireless functions (TDMA & CDMA), the functions implemented in software or in hardware is equivalent. The limitation of the computer-readable medium having stored thereon sequences of instructions including instructions when executed to perform is obvious and does not particular indicate the invention subject matter.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moriyama (US 6,307,879 B1).

Regarding **claims 2 & 22**, Moriyama does not explicitly show the base station

and mobile station in the FIG.12 of the third embodiment, however in FIG.15 of the fifth embodiment Moriyama teaches the base station 70 and the mobile stations 60 wherein the processing unit 41 is included in the mobile station. At the time of the invention was made, it would have been obvious to one of ordinary skill in the art to have the mobile station calculating and adjusting the eye distortion taught in the FIG.12 & FIG.13 employed in the CPU 41 and DSP 47 of mobile 60 in FIG.15 to have a system be able to adjust the eye distortion and reduce the jamming as well (column 18 line 21-24).

6. Claim 3-4 and 23-24 rejected under 35 U.S.C. 103(a) as being unpatentable over Moriyama (US 6,307,879 B1) in view Mobin et al. (US 6,522,695 B1).

Regarding **claims 3-4 & 23-24**, Moriyama does not explicitly specify the motion of at least one of the stations, however, in FIG.1A or FIG.1B, Mobin et al. teaches the frequency offset for the adaptive frequency correction (AFC) be relative motion between a base and a mobile station (column 1, lines 45-50 '696). As Moriyama disclosing the frequency/phase offset/distortion in the AFC to maintain the VCO (column 2, lines 61-67 '879), at the time of the invention was made, it would have been obvious to one of ordinary skill in the art to have the Moriyama's frequency distortion (the metric) being indicative of motion of the stations as taught by Mobin et al. to correct the well-known Doppler shift of a frequency of the signal being transmitted (column 1, lines 48-52 '696) in an AFC system for acquiring and tracking the relative frequency error between a mobile station and a base station (column 1, lines 57-60 '696) for the purpose of

correcting the frequency error to recover the signal transmitted to the receiver (column 1, lines 7-9 '696).

7. Claim 15-17 and 35-37 rejected under 35 U.S.C. 103(a) as being unpatentable over Moriyama (US 6,307,879 B1) in view of Thomas (US 6,697,642 B1).

Regarding **claims 15-17 & 35-37**, Moriyama does not specify the antenna mode, however in FIG.4, Thomas teaches the mobile (column 5 lines 34-36) having the directional antenna (58, column 2 lines 25-31, wherein the antenna has the omni or the directive pattern/mode) with beam elements (581 to 58N), and the antenna controller 516 (column 8 lines 14-21) to control the antenna having a relatively narrow beam steered to a desired direction (column 8 lines 26-29). At the time of the invention was made, it would have been obvious to a person of ordinary skill in the art to have the directive antenna and the antenna controller taught by Thomas in the Moriyama's station that the antenna controller receives the coded/decoded signal (determined the signal quality, column 3 lines 15-21 '642) to reduce the co-channel interference to improve the capacity (column 7 lines 15-21 '642).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M. Chang whose telephone number is 571-272-3041. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay K. Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2637

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang
January 26, 2006


KHAI TRAN
PRIMARY EXAMINER